भारतीय मानक **IS 4832 (Part 1) : 2023**

Indian Standard

रासायनिक प्रतिरोधी मोर्टार — विशिष्टि

भाग 1 सिलिकेट प्रकार

(पहला पुनरीक्षण)

Chemical Resistant Mortars — Specification

Part 1 Silicate Type

(First Revision)

ICS 91.100.10

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November 2023 **Price Group 5**

Flooring, Wall Finishing and Roofing Sectional Committee, CED 05

FOREWORD

This Indian Standard (Part 1) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Flooring, Wall Finishing and Roofing Sectional committee had been approved by the Civil Engineering Division Council.

The chemically setting silicate type mortars are resistant to most acids except hydro-fluoric, and concentrated ortho-phosphoric acids. They are not resistant to alkalies of any concentration, or to boiling water and steam and are likely to be deteriorated by continued exposure with water or frequent washing with water. The silicate type of mortar is found to be satisfactory to resist nitric, chromic, sulphuric, acetic, formic, phosphoric and hydrochloric acids and are used for jointing acid-proof bricks or tiles in construction of towers, stacks, tank lining, sumps, drains, chemical resistant floors, etc.

The standard was first published in 1969. In this revision, following major changes have been incorporated:

a) Sampling plan has been updated;
b) Requirements have been updated in SI units;
c) Packing and marking clause has been updated;
d) BIS certification marking clause has been modified; and
e) Amendment to the previous standard has been incorporated.

This standard is one of the series of Indian Standards on chemical resistant mortars; the others being:

Part 2 Resin type
Part 3 Sulphur type

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

This standard contributes to the United Nations Sustainable Development Goal 9. 'Industry, innovation and infrastructure, build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation'.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CHEMICAL RESISANT MORTARS — SPECIFICATION
PART 1 SILICATE TYPE

(First Revision)

1 SCOPE

This standard specifies the requirements for silicate type chemical resistant mortars for bonding chemical resistant masonry units.

2 REFERENCES

The standards given below contains provisions, which through reference in this text, constitute the provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

IS No.	*Title*
IS 4441 : 1980	Code of practice for use of silicate type chemical resistant mortars (*first revision*)
IS 4456	Methods of test for chemical resistant mortars:
(Part 1) : 1967	Silicate type and resin type
(Part 2) : 1967	Sulphur type

3 TERMINOLOGY

For the purpose of this standard, the following definition shall apply.

3.1 Chemically Setting Silicate Type Chemical Resistant Mortar — An intimate mixture of a chemically inert solid filler, a setting agent usually contained in the filler and a liquid silicate binder. When the filler and the binder are mixed at ordinary temperatures, a trowelable mortar is formed which subsequently hardens by the chemical reaction between the eating agent and the liquid silicate binder.

4 MATERIALS

4.1 Binders

The liquid binder may be a solution of sodium silicate or potassium silicate with silica sodium oxide/silica potassium oxide molecular ratio of 3.0 to 3.7. The solution shall have a specific gravity of about 1.4 and shall be capable of forming chemical resistant mortar when mixed with a powder containing suitable setting agent and filler material.

4.2 Fillers

The fillers may be silica, quartz, ganister, andesite or other material insoluble in common mineral acids, except hydro-fluoric acid.

4.3 Setting Agent

The setting agent generally used is a fluoride or acid compound which shall react with the silicate binder to form an insoluble silica gel.

5 PHYSICAL REQUIREMENTS

Chemically setting silicate type chemical resistant mortars shall satisfy the requirements given in Table 1 when tested in accordance with IS 4456 (Part 1).

6 CHEMICAL RESISTANCE REQUIREMENT

The limits of chemical resistance may be mutually agreed to between the purchaser and the supplier when tested in accordance with IS 4456 (Part 1) and IS 4456 (Part 2). A general guideline for chemical resistance of silicate type mortars to various substances is given in Table 1 of IS 4441.

7 SAMPLING

The method of drawing representative samples of the material and the criteria for conformity shall be as given in Annex A.

8 PACKING AND MARKING

The silicate solution shall be packed in suitable

sealed airtight containers. The dry mix shall he properly packaged to prevent deterioration in transit and storage. The following information shall be marked legibly and indelibly on each package:

a) Name of manufacturer;
b) Date of manufacture/batch no;
c) Net volume/weight in case of solution;
d) Net weight in case of dry mix;
e) Storage instructions; and
f) Shelf life.

9 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

Table 1 Physical Requirements of Silicate Type Chemical Resistant Mortars

(*Clauses* 5, 6, A-3.1 *and* A-3.3)

Sl No.	Characteristic	Requirements of Mortars	
		Sodium Silicate	Potassium Silicate
(1)	(2)	(3)	(4)
i)	Working time, Minutes, *Min* (at 27 °C ± 2 °C)	15	20
ii)	Flexural strength, MPa, *Min* (7 days)	3.5	4.0
iii)	Compressive strength, MPa, *Min* (7 days)	10	15
iv)	Bond strength, MPa, *Min* (7 days)	0.5	0.5
v)	Absorption of toluene, percent by weight, *Max*	18	18

ANNEX A

(*Clause* 7)

SAMPLING PROCEDURE FOR ACCEPTANCE TEST

A-1 LOT

A-1.1 The quantity of binder and filler from the same manufacturing unit offered for inspection in one lot shall be such as to give not less than 1 000 kg of the mortar when mixed well by suitable means.

A-1.2 Samples shall be selected and tested from each lot separately for ascertaining its conformity to the requirements of the specification.

A-2 SELECTION

Since the mortar is obtained by intimately mixing the filler and the binder which are packed separately, as a first step suitable number of containers of the filler and binder shall be selected from the lot. The number of containers shall not be less than 20 percent of the total number of containers in the lot. Equal quantities of material shall be taken from each container selected and the filler and the binder shall be mixed well to give the sample of mortar for the lot.

A-3 CRITERIA FOR CONFORMITY

A-3.1 Specimens shall be taken from the mortar sample and tested for all the requirements given in Table 1 of this standard.

A-3.2 A lot shall be considered as having satisfied the requirements of this specification if the results for all the tests satisfy the relevant requirements of this specification.

A-3.3 Re-test

If the sample, when tested, do not comply with the requirements specified in Table 1, another set of sample shall be prepared from the same lot and subjected to the tests. If the second sample also fails to comply with the requirements of Table 1 then the lot represented by the samples shall be rejected.

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Flooring, Wall Finishing and Roofing Sectional Committee, CED 05

Organization	*Representative(s)*
In Personal Capacity (*L/109, Sarita Vihar, New Delhi - 110076*)	SHRI ASHOK KHURANA **(*Chairperson*)**
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